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**REMARKS**

This paper is responsive to any paper(s) indicated above, and is responsive in any other manner indicated below.

**REQUEST FOR EXAMINER INTERVIEW AFTER FINAL REJECTION**

An Examiner interview after final rejection is respectfully requested. As stated in MPEP '713.01, "Examiners may grant one interview after final rejection. See MPEP '713.09." MPEP '713.09, in turn, states, "Normally, one interview after final rejection is permitted." A substantial pendency period has already accumulated and substantial written prosecution has already been conducted in the application. At this point in time, an Examiner interview appears to be the most logical and preferred method of further prosecution in the application, i.e., an Examiner interview will accelerate prosecution by providing immediate discussion and feedback superior to the delayed discussion and feedback of normal intermittent written prosecution. Accordingly, Applicant respectfully submits the following reasons for requesting an Examiner interview. It is believed that the circumstance within the present case matches the validating circumstance for an Examiner interview as set forth in MPEP '713.01, i.e., "...the nature of the case is such that the interview could serve to develop and clarify specific issues and lead to a mutual understanding between the Examiner and the Applicant, and thereby advance the prosecution of the application."

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in that: it is believed that an interview would accelerate early agreement on the claims; it is believed that an interview would assist Applicant in judging the extent of allowable subject matter in the application; and, it is believed that an interview would assist Applicant in judging the propriety and preferred mode of continued prosecution of the non-allowed claims and/or the entire application. The Examiner is respectfully requested to contact the attorney indicated on this paper at the local Washington, D.C. area telephone number of 703/312-6600 for the purpose of scheduling an examiner interview. The Examiner is thanked in advance for such considerations. Contact will also be attempted by the undersigned attorneys to schedule an Examiner Interview. In the event that the present papers, in and of themselves, are sufficient to place the application in condition for allowance, no Examiner interview would be necessary.

#### **REJECTION UNDER '112, 2ND PAR. OBLIVIATED VIA CLAIM AMENDMENT**

Claims 1-6 and 10-15 have been rejected under 35 USC '112, second paragraph, as being indefinite for the concerns listed on page 2 of the Office Action. Appropriate ones of such claims have been carefully reviewed and carefully amended where appropriate in order to address the Office Action listed concerns. As the foregoing is believed to have addressed all '112 second paragraph concerns, reconsideration and withdrawal of the '112 second paragraph rejection are respectfully requested.

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### PENDING CLAIMS

Claims 1-15 were pending in the application. Appropriate claims have been amended, canceled and/or added (without prejudice or disclaimer) in order to adjust a clarity and/or focus of Applicant's claimed invention. That is, such changes are unrelated to any prior art or scope adjustment and are simply refocused claims in which Applicant is present interested. At entry of this paper, Claims 1-15 will be pending for further consideration and examination in the application.

### REJECTION(S) UNDER 35 USC '103

The 35 USC '103 rejection is respectfully traversed. However, such rejections have been rendered obsolete by the present clarifying amendments to Applicant's claims, and accordingly, traversal arguments are not appropriate at this time. However, Applicant respectfully submits the following to preclude renewal of any such rejections against Applicant's clarified claims.

All descriptions of Applicant's disclosed and claimed invention, and all descriptions and rebuttal arguments regarding the applied prior art, as previously submitted by Applicant in any form, are repeated and incorporated hereat by reference. Further, all Office Action statements regarding the prior art rejections are respectfully traversed. As additional arguments, Applicant respectfully submits the following.

Applicant's disclosed and claimed invention is directed toward trim-treat arrangements which treat edge roughness or sidewall striations along vertical mask sidewalls, and which utilize a calculator which automatically calculates a trim-treat time for ultimately achieving a target width.

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More particularly, it is noted that

Applicant's FIGS. 10A (reproduced herewith)

is a top view (i.e., above vertical mask sidewalls) showing undesirable line edge roughness along vertical mask sidewalls.

Because the wavering line edge of FIG. 10A's (top view) mask edge is projected vertically downward by the etching operation, vertical sidewalls of the mask would thus have edge roughness or sidewall striations extending vertically such as shown in the following perspective sketch. In order to further support such contention, reproduced herewith is a copy of a photograph/graphic portion of

Slide 16 of a slide presentation (copy provided herewith) titled "Line Edge Roughness Reduction For

Advanced Metal Gate Etch With 193 nm

Lithograph In A Silicon Decoupled Plasma

Source Etcher (DPSII)", authored by Tito

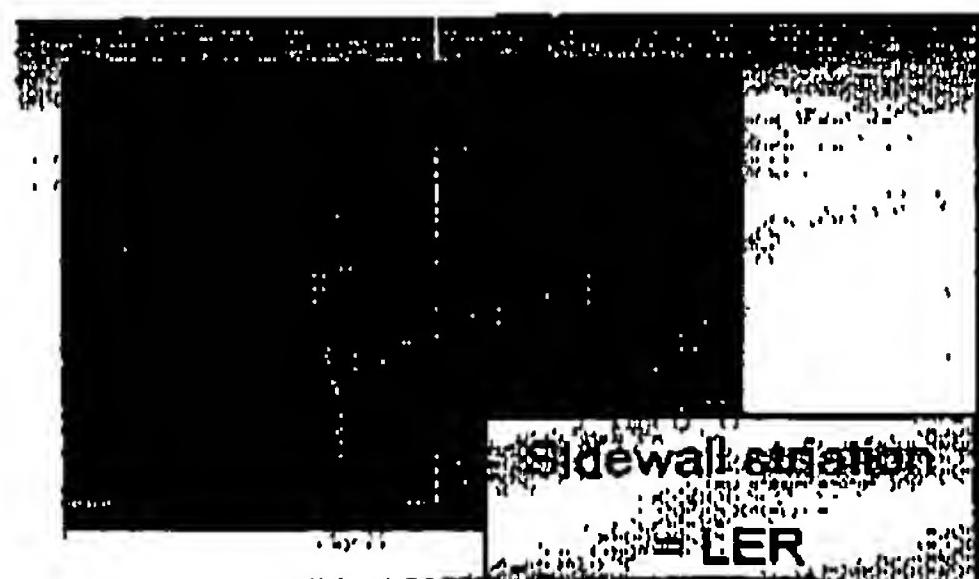
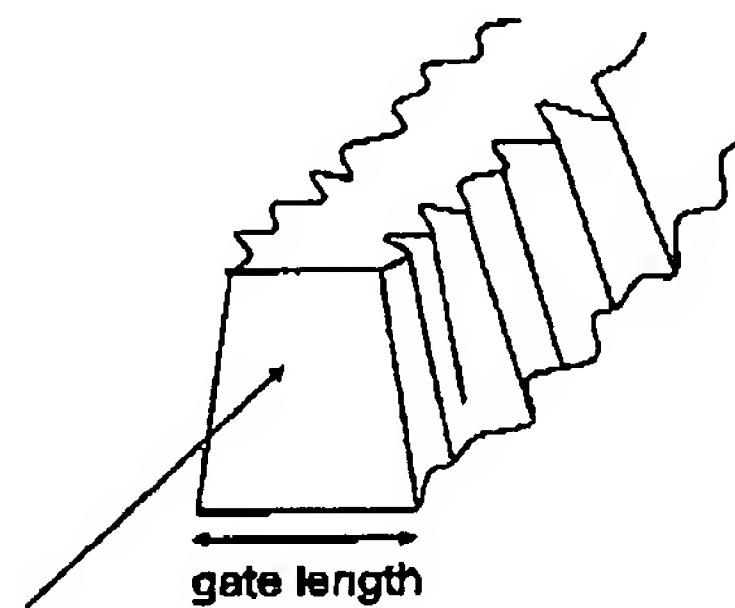
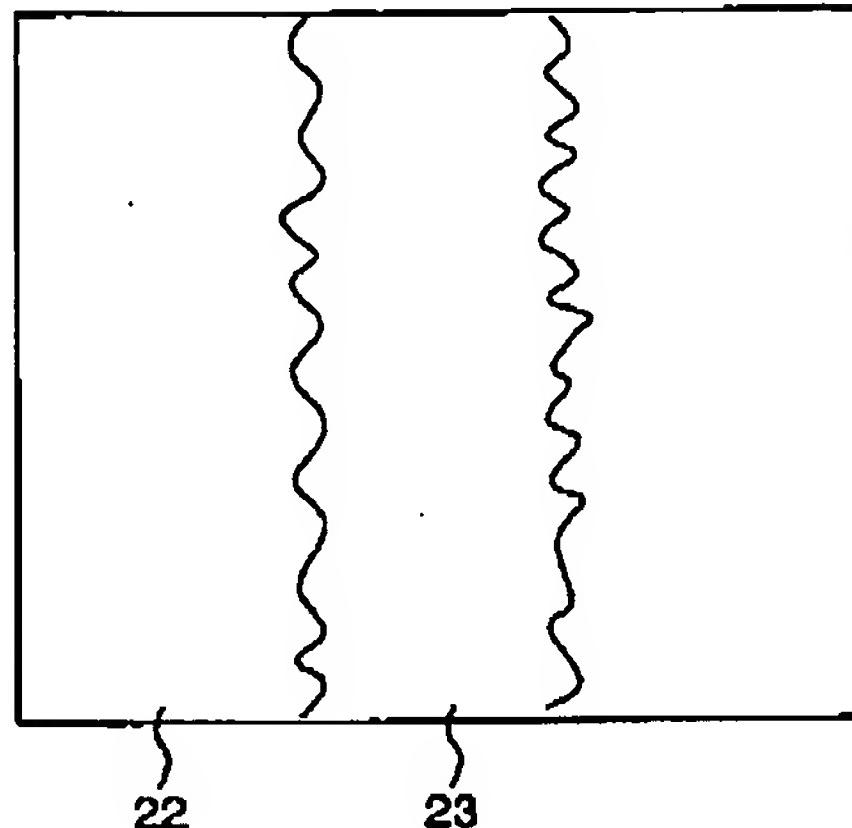
Chowdhury et al., and dated January 13. Note

from the text associated with such photograph,

that Chowdhury et al. characterize such as

"LER" or "Sidewall Striation". Accordingly, it is respectfully submitted that it was known in the art (to which the present invention pertains) that LER resultant from a mask having an undulating or wavering line edge would be sidewall striation.

**FIG.10A**



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Such LER or sidewall striations make it difficult to produce semiconductor devices (e.g., FET transistors) having consistent or expected "gate lengths" (indicated on sketch on previous page) as the undulations or sidewall striations cause unpredictable or varying gate lengths. Applicant's invention is directed toward lessening the degree of LER or sidewall striations. More particularly, while Applicant's FIG. 10A (reproduced again herewith) shows an unacceptable line edge roughness or sidewall striations along vertical mask sidewalls, Applicant's FIG. 10B (reproduced herewith) is another top view showing improved edge roughness or sidewall striations.

FIG.10A

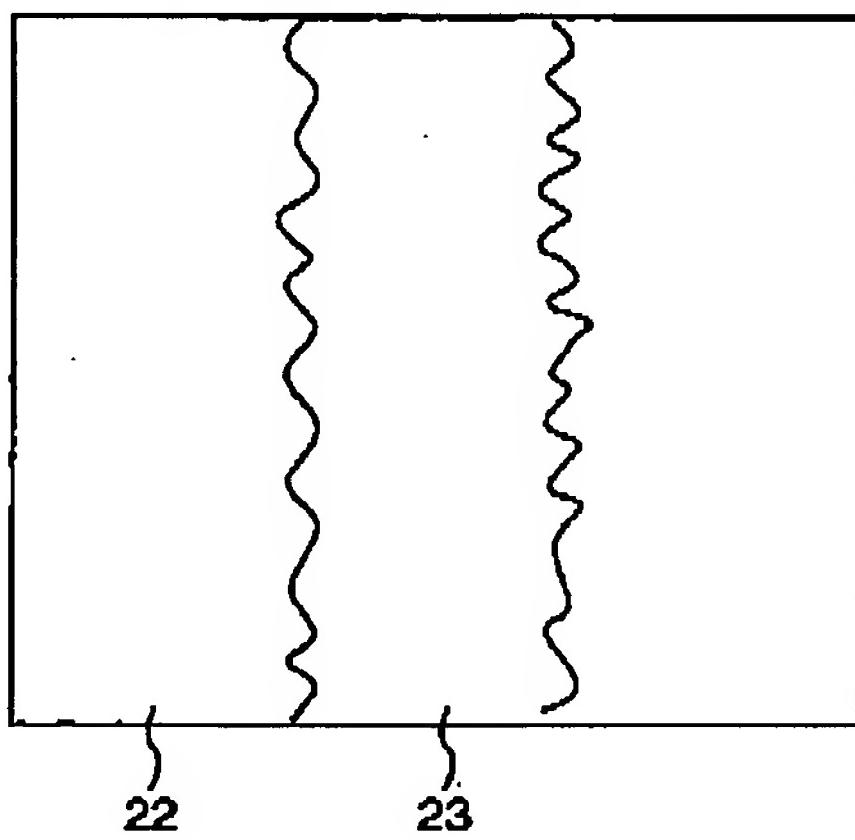
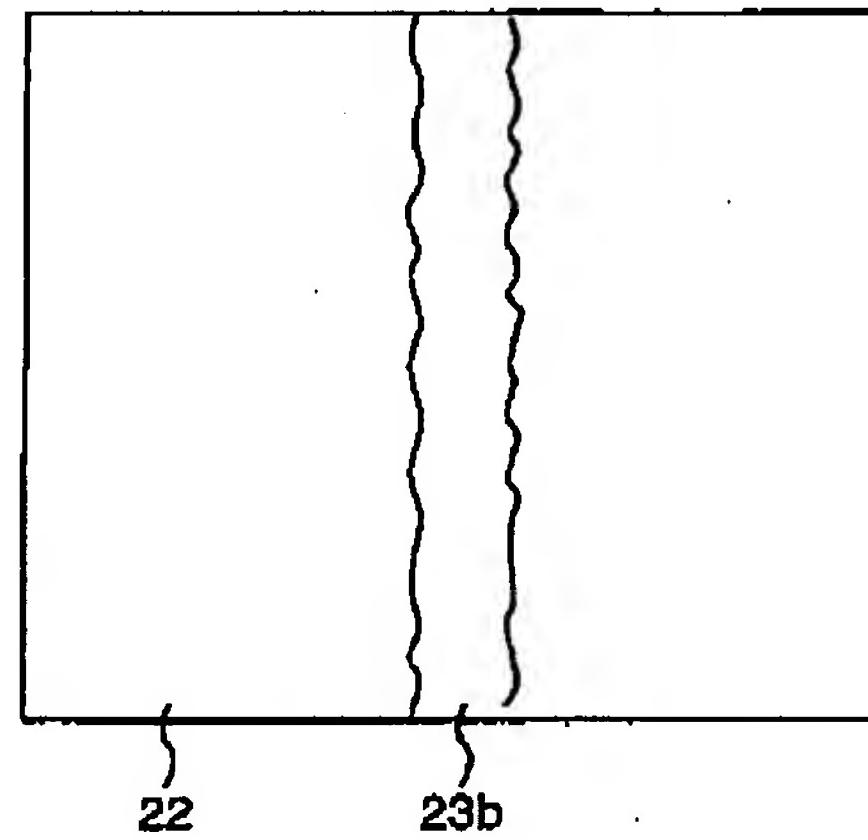


FIG.10B



"Trimming treatment" is utilized within Applicant's disclosed and claimed invention to accomplish improved edge roughness or sidewall striations. The actual physical/chemical phenomenon for accomplishing the improvement is described within Applicant's original specification page 13, line 12+ referring to specification FIGS. 5A-5C. The physical/chemical phenomenon must be applied for an appropriate length of time in order to accomplish a desired smoothing result.

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In order to provide proper trim-treat timing, Applicant's invention includes for example (claim 1), an "apparatus comprising: a plasma monitor for measuring an amount of radicals in said plasma process chamber; and trimming condition calculating means for calculating a condition required for trimming treatment to obtain a desired mask width on the basis of a precedently measured width dimension of said patterned mask and a precedently measured amount of sidewall striation of mask sidewalls of the mask, as well as the amount of radicals measured by said plasma monitor, wherein the trimming treatment is carried out for the trimming condition calculated by said trimming condition calculating means." Other ones of Applicant's claims have similar features/limitations.

Turning now to rebuttal of the art, and in particular, the Rauf article, it is respectfully noted that Rauf is deficient in at least two regards. First, it appears that Rauf is not directed to treating sidewall striation along vertical mask sidewalls, and is instead directed toward treating generalized roughness. That is, Rauf at page 256, right-hand column, first full paragraph, mentions "vertical striations", but such Rauf text then goes on say that "...the two-dimensional model considered in this article will not apply to this type of roughness." Accordingly, Rauf explicitly teaches that Rauf's arrangements do not apply to "vertical striations".

As a second deficiency, Rauf nowhere teaches a calculating arrangement for calculating trimming conditions for ultimately arriving at a target width.

With respect to the primary Kagoshima et al. reference, such reference (whether taken alone, or in combination with Rauf) does not cure the deficiencies mentioned above with respect to the Rauf reference.

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In addition to the foregoing, the following additional remarks from Applicant's foreign representative are also submitted in support of traversal of the rejection and patentability of Applicant's claims.

The Examiner objects to the term "edge roughness of mask sidewall in a lateral direction of the mask" limited in the claims because the specification does not appear to limit the orientation of roughness in a specific direction. Applicants traverse the objection because the term is expressly readable on the disclosure of this application.

That is, Figs. 10A and 10B and Fig.3 showing the top views of gate wiring electrode (mask pattern) explicitly express or disclose "edge roughness of mask sidewall in a lateral direction of the mask". These top views show roughness of mask sidewall when observed or viewed from the top side of the mask. The roughness is in a lateral direction of the mask sidewall. Therefore, the term is inherently disclosed, and is thus not new matter.

As a result of all of the foregoing, it is respectfully submitted that the applied art (taken alone and in the Office Action combinations) would not support a '103 obviousness-type rejection of Applicant's claims. Accordingly, reconsideration and withdrawal of such '103 rejection, and express written allowance of all of the '103 rejected claims, are respectfully requested.

#### **EXAMINER INVITED TO TELEPHONE**

The Examiner is herein invited to telephone the undersigned attorneys at the local Washington, D.C. area telephone number of 703/312-6600 for discussing any

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Examiner's Amendments or other suggested actions for accelerating prosecution and moving the present application to allowance.

### **RESERVATION OF RIGHTS**

It is respectfully submitted that any and all claim amendments and/or cancellations submitted within this paper and throughout prosecution of the present application are without prejudice or disclaimer. That is, any above statements, or any present amendment or cancellation of claims (all made without prejudice or disclaimer), should not be taken as an indication or admission that any objection/rejection was valid, or as a disclaimer of any scope or subject matter.

Applicant respectfully reserves all rights to file subsequent related application(s) (including reissue applications) directed to any/all previously claimed limitations/features which have been subsequently amended or cancelled, or to any/all limitations/features not yet claimed, i.e., Applicant continues (indefinitely) to maintain no intention or desire to dedicate or surrender any limitations/features of subject matter of the present application to the public.

### **CONCLUSION**

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the application are now in condition for allowance.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR 1.136. Authorization is herein given to charge any shortage in the fees, including extension of time fees and excess claim fees, to Deposit Account No. 01-

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2135 (Case No. 500.43597X00) and please credit any excess fees to such deposit account.

Based upon all of the foregoing, allowance of all presently-pending claims is respectfully requested.

Respectfully submitted,

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